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☐ 1: Int Arch Allergy Appl Immunol
1990;91(2):118-23

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Nucleotide

NEW

Isolation of cDNA coding for the major mite allergen Der p II by IgE plaque immunoassay.

PubMed
Services

Chua KY, Doyle CR, Simpson RJ, Turner KJ, Stewart GA, Thomas WR.

Clinical Immunology Research Unit, Princess Margaret Hospital for Children,
Subiaco, Australia.

Related
Resources

A lambda gt11 library made with cDNA from the house dust mite *Dermatophagoides pteronyssinus* was screened with human allergic serum by IgE plaque radioimmunoassay. This resulted in the isolation of clones coding for the major allergen Der p II. The cDNA coded for a 129-residue protein of 14,131 daltons with no N-glycosylation sites. No sequence homology with other proteins was evident. The Der p II expressed in *Escherichia coli* reacted with IgE in 14 of 17 sera from mite-allergic patients giving clonal evidence for its designation as a major allergen. This, along with previous work, has resulted in the cloning of the two major mite allergens.

PMID: 2341191 [PubMed - indexed for MEDLINE]

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☐ 1: **A60381 allergen Der p II precursor - house-dust mite (Dermatophagoides pteronyssinus)** BLINK, PubMed, Related Sequences, Taxonomy

LOCUS A60381 146 aa INV 13-SEP-1998
 DEFINITION allergen Der p II precursor - house-dust mite (Dermatophagoides pteronyssinus).
 ACCESSION A60381
 PID g280576
 VERSION A60381 GI:280576
 DBSOURCE pir: locus A60381;
 summary: #length 146 #molecular-weight 15999 #checksum 25;
 superfamily: allergen Der p II;
 PIR dates: 03-Mar-1993 #sequence_revision 03-Mar-1993 #text_change 13-Sep-1998.

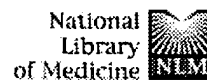
KEYWORDS .
 SOURCE Dermatophagoides pteronyssinus.
 ORGANISM Dermatophagoides pteronyssinus
 Eukaryota; Metazoa; Arthropoda; Chelicerata; Arachnida; Acari;
 Acariformes; Sarcoptiformes; Astigmata; Analgoidea; Pyroglyphidae;
 Dermatophagoides.

REFERENCE 1 (residues 1 to 146)
 AUTHORS Chua,K.Y., Doyle,C.R., Simpson,R.J., Turner,K.J., Stewart,G.A. and Thomas,W.R.
 TITLE Isolation of cDNA coding for the major mite allergen Der p II by IgE plaque immunoassay
 JOURNAL Int. Arch. Allergy Appl. Immunol. 91 (2), 118-123 (1990)
 MEDLINE 90256301

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 /note="allergen Der p II"

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☐ 1: Eur J Biochem 1991 Nov 15;202(1):41-51[Related Articles, Books, Protein](#)

NEW

Limited proteolysis of tetanus toxin. Relation to activity and identification of cleavage sites.

PubMed
Services**Krieglstein KG, Henschen AH, Weller U, Habermann E.**

Department of Molecular Biology and Biochemistry, University of California, Irvine 92717.

Related
Resources

Tetanus toxin is synthesized by *Clostridium tetani* as a 151-kDa peptide chain. The primary gene product is processed post-translationally by removal of the initiating methionine residue, formation of disulfide bridges and limited proteolysis by bacterial or exogenous proteinases. The mature toxins consist of a 52-kDa light chain and a 98-kDa heavy chain, linked together by a disulfide bond. Proteolytic nicking is accompanied by increased pharmacological potency. To identify the structural alterations involved, single-chain toxin has been subjected to limited proteolysis with various enzymes. The new N-termini have been determined by Edman degradation and the C-termini by isolation of short C-terminal peptide fragments and subsequent analysis of the sequence and composition. All two-chain toxins result from proteolytic nicking within the 17-residue segment of residues 445-461. Thus, the protease(s) of the culture broth cleave on the C-terminal side of Glu449 and partially Ala456, giving rise to two heavy chain N-termini. Trypsin and clostripain first attack the C-terminal of Arg454 and later Arg448, whereas endoproteinase Arg-C cleaves the former bond only. Chymotrypsin and endoproteinase Glu-C each split a single peptide bond, i.e. that located after Tyr452 and Glu449, respectively. Papain gives rise to a large number of cleavages within the 17-residue segment, the new C-terminus being Thr445 or Asn446 and the new N-terminus being Asp460 or Leu461. Further papain digestion leads to an additional cleavage within the heavy chain between Ser863 and Lys864. The original N-terminal Pro1 and C-terminal Asp1314, predicted from the nucleotide sequence, are conserved in all proteolytic digests. The pharmacological activity of the various two-chain toxins was 5-11 times that of the single-chain toxin, as estimated from the inhibition of [3H]noradrenaline release from rat-brain homogenate. The present data on the processing and activation by limited proteolysis prove the existence of several active tetanus isotoxins. These data, together with our previous data on the localization of disulfide bridges and sulfhydryl groups (Krieglstein, K., Henschen, A., Weller, U. & Habermann, E. (1990) Eur. J. Biochem. 188, 39-45), provide the detailed protein chemical

characterization of the tetanus isotoxins.

PMID: 1935979 [PubMed - indexed for MEDLINE]

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☐ 1: **P04958 TETANUS TOXIN PRECURSOR (TENTOXLYLYSIN)** BLink, PubMed, Related Sequences, Taxonomy

LOCUS TETX_CLOTE 1315 aa BCT 15-JUL-1999
 DEFINITION TETANUS TOXIN PRECURSOR (TENTOXLYLYSIN).
 ACCESSION P04958
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 VERSION P04958 GI:135624
 DBSOURCE swissprot: locus TETX_CLOTE, accession P04958;
 class: standard.
 plasmid:, created: Aug 13, 1987.
 sequence updated: Aug 13, 1987.
 annotation updated: Jul 15, 1999.
 xrefs: gi: gi: 40769, gi: gi: 40770, gi: gi: 144920, gi: gi: 144921, gi: gi: 40773, gi: gi: 40774, gi: gi: 69647, gi: gi: 3212428, gi: gi: 3891994
 xrefs (non-sequence databases): PROSITE PS00142
 KEYWORDS Neurotoxin; Transmembrane; Hydrolase; Metalloprotease; Zinc; Plasmid; 3D-structure.
 SOURCE Clostridium tetani.
 ORGANISM Clostridium tetani
 Bacteria; Firmicutes; Bacillus/Clostridium group; Clostridiaceae; Clostridium.
 REFERENCE 1 (residues 1 to 1315)
 AUTHORS Eisel,U., Jarausch,W., Goretzki,K., Henschen,A., Engels,J., Weller,U., Hudel,M., Habermann,E. and Niemann,H.
 TITLE Tetanus toxin: primary structure, expression in E. coli, and homology with botulinum toxins
 JOURNAL EMBO J. 5 (10), 2495-2502 (1986)
 MEDLINE 87053814
 REMARK SEQUENCE FROM N.A.
 REFERENCE 2 (residues 1 to 1315)
 AUTHORS Fairweather,N.F. and Lyness,V.A.
 TITLE The complete nucleotide sequence of tetanus toxin
 JOURNAL Nucleic Acids Res. 14 (19), 7809-7812 (1986)
 MEDLINE 87040747
 REMARK SEQUENCE FROM N.A.
 STRAIN=CN3911
 REFERENCE 3 (residues 1 to 1315)
 AUTHORS Fairweather,N.F., Lyness,V.A., Pickard,D.J., Allen,G. and Thomson,R.O.
 TITLE Cloning, nucleotide sequencing, and expression of tetanus toxin fragment C in Escherichia coli
 JOURNAL J. Bacteriol. 165 (1), 21-27 (1986)
 MEDLINE 86085672
 REMARK SEQUENCE OF 742-1314 FROM N.A.
 REFERENCE 4 (residues 1 to 1315)
 AUTHORS Krieglstein,K., Henschen,A., Weller,U. and Habermann,E.
 TITLE Arrangement of disulfide bridges and positions of sulfhydryl groups in tetanus toxin
 JOURNAL Eur. J. Biochem. 188 (1), 39-45 (1990)
 MEDLINE 90201034
 REMARK PARTIAL SEQUENCE, AND DISULFIDE BONDS.
 REFERENCE 5 (residues 1 to 1315)

AUTHORS Krieglstein,K.G., Henschen,A.H., Weller,U. and Habermann,E.
TITLE Limited proteolysis of tetanus toxin. Relation to activity and
identification of cleavage sites
JOURNAL Eur. J. Biochem. 202 (1), 41-51 (1991)
MEDLINE 92037649
REMARK PARTIAL SEQUENCE.
REFERENCE 6 (residues 1 to 1315)
AUTHORS Schiavo,G., Poulain,B., Rossetto,O., Benfenati,F., Tauc,L. and
Montecucco,C.
TITLE Tetanus toxin is a zinc protein and its inhibition of
neurotransmitter release and protease activity depend on zinc
JOURNAL EMBO J. 11 (10), 3577-3583 (1992)
MEDLINE 93010948
REMARK IDENTIFICATION AS ZINC-PROTEASE.
REFERENCE 7 (residues 1 to 1315)
AUTHORS Schiavo,G., Benfenati,F., Poulain,B., Rossetto,O., Polverino de
Laureto,P., DasGupta,B.R. and Montecucco,C.
TITLE Tetanus and botulinum-B neurotoxins block neurotransmitter release
by proteolytic cleavage of synaptobrevin
JOURNAL Nature 359 (6398), 832-835 (1992)
MEDLINE 93063293
REMARK IDENTIFICATION OF SUBSTRATE.
REFERENCE 8 (residues 1 to 1315)
AUTHORS Umland,T.C., Wingert,L.M., Swaminathan,S., Furey,W.F., Schmidt,J.J.
and Sax,M.
TITLE Structure of the receptor binding fragment HC of tetanus neurotoxin
JOURNAL Nat. Struct. Biol. 4 (10), 788-792 (1997)
MEDLINE 97475217
REMARK X-RAY CRYSTALLOGRAPHY (2.7 ANGSTROMS) OF 874-1314.
COMMENT

This SWISS-PROT entry is copyright. It is produced through a
collaboration between the Swiss Institute of Bioinformatics and
the EMBL outstation - the European Bioinformatics Institute.
The original entry is available from <http://www.expasy.ch/sprot>
and <http://www.ebi.ac.uk/sprot>

[FUNCTION] TETANUS TOXIN ACTS BY INHIBITING NEUROTRANSMITTER
RELEASE. IT BINDS TO PERIPHERAL NEURONAL SYNAPSES, IS INTERNALIZED
AND MOVES BY RETROGRADE TRANSPORT UP THE AXON INTO THE SPINAL CORD
WHERE IT CAN MOVE BETWEEN POSTSYNAPTIC AND PRESYNAPTIC NEURONS. IT
INHIBITS NEUROTRANSMITTER RELEASE BY ACTING AS A ZINC ENDOPEPTIDASE
THAT CATALYZES THE HYDROLYSIS OF THE 76-GLN-|-PHE-77 BOND OF
SYNAPTOBREVIN-2.

[CATALYTIC ACTIVITY] HYDROLYSIS OF 76-GLN-|-PHE-77 BOND IN
SYNAPTOBREVIN.

[SUBUNIT] THE PRECURSOR POLYPEPTIDE IS SUBSEQUENTLY CLEAVED TO
YIELD SUBCHAINS L AND H. THESE REMAIN LINKED BY A DISULFIDE BRIDGE
AND ARE NON-TOXIC AFTER SEPARATION.

[MISCELLANEOUS] THE C-TERMINAL OF THE HEAVY CHAIN BINDS TO
GANGLIOSIDE RECEPTORS.

[SIMILARITY] BELONGS TO PEPTIDASE FAMILY M27 (ZINC
METALLOPROTEASE); ALSO KNOWN AS THE TETANUS/BOTULINUM NEUROTOXIN
SUBFAMILY.

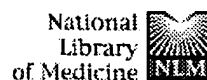
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☐ 1: J Allergy Clin Immunol 1989 Jun;83(6):1055-67

Related Articles, Books, Protein

NEW

Antigenic and structural analysis of group II allergens (Der f II and Der p II) from house dust mites (*Dermatophagoides* spp).

PubMed
Services

Heymann PW, Chapman MD, Aalberse RC, Fox JW, Platts-Mills TA.

Department of Internal Medicine, University of Virginia Medical Center,
Charlottesville 22908.Related
Resources

Monoclonal antibody affinity chromatography was used to purify two homologous mite allergens, Der f II from *Dermatophagoides farinae* and Der p II from *D. pteronyssinus*. They have the same molecular weight (MW) (15 kd) on sodium dodecyl sulfate-polyacrylamide gel electrophoresis, they have similar amino acid compositions, and their N-terminal amino acid sequences differ in only four of the first 35 residues. An excellent correlation was observed between IgE antibody to Der f II and Der p II measured in sera from 65 mite-allergic patients ($r = 0.94$; p less than 0.001) and between quantitative intradermal skin tests to both allergens. A third allergen (Der f III, MW 29 kd) was purified from *D. farinae* by repeated gel filtration. In sera from 51 mite-allergic patients, IgE antibody to Der f II, Der f III, and previously purified Der f I (MW 24 kd) was detected in 92%, 16%, and 78% of the sera by radioimmunoassay, respectively. Most patients, 41/51 (80%), demonstrated IgE antibody to more than one allergen. With monoclonal antibodies fully cross-reactive with Der f II and Der p II, a two-site immunoassay was developed for measuring absolute quantities (nanograms or micrograms) of these allergens. In extracts rich in mite-fecal material ($n = 5$), Der f I and Der p I (group I allergens) and Der f II and Der p II (group II allergens) were measured in ratios of 11:1 to 35:1. Lower ratios (1.1:1 to 7:1) were observed in mite body extracts ($n = 6$). These experiments clearly define a second group of major dust mite allergens that demonstrate extensive structural and antigenic homology.

PMID: 2732406 [PubMed - indexed for MEDLINE]

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